

1 Claims

2 1. Method for processing a noise-tainted speech signal (S) for
3 a subsequent speech recognition (SR), with the speech signal
4 (S) representing at least one speech command, with the
5 following steps:

6 a) Detecting the noise-affected speech signal (S);

7 b) Application of noise reduction (NR) to the speech signal (S)
8 for generation of a noise-reduced speech signal (S');

9 c) Normalization of the noise-reduced speech signal (S') using
10 a normalization factor to a required signal level for
11 generation of a noise-reduced, normalized speech signal (S").

12 2. Method in accordance with claim 1, in which value of the
13 normalization factor is defined depending on a speech activity.

14 3. Method in accordance with claim 2, in which the speech
15 activity is determined on the basis of the noise-reduced speech
16 signal.

17 4. Method in accordance with one of the previous claims, with
18 the following further step:

19 d) Description of the noise-reduced, normalized speech command
20 by one or more feature vectors.

21 5. Method in accordance with claim 4, in which the one or more
22 feature vectors are created to describe the noise-reduced,
23 normalized speech command.

24 6. Method in accordance with one of the previous claims, with
25 the following further step:

26 e) Transmission of a signal describing the feature vector or
27 the feature vectors.

1 7. Method in accordance with one of the previous claims, with
2 the following further step:

3 f) Performing speech recognition based on the noise-reduced,
4 normalized speech command.

5 8. Method in accordance with claim 6 or 7, in which the
6 recording of the speech signal in step a) and the performance
7 of the speech recognition in step f) are undertaken at separate
8 locations.

9 9. Method in accordance with one of the previous claims, in
10 which a preprocessing (AFE) and a feature compression (FC) of
11 feature vectors which describe a speech signal are executed at
12 separate locations or in the same place.

13 10. Method for training a speech command in a noise-tainted
14 speech signal with the following steps:

15 a') Recording a noise-tainted speech signal;

16 b') Application of noise reduction to the speech signal for
17 generation of a noise-reduced speech signal;

18 c') Normalization of the noise-reduced speech signal by means
19 of a normalization factor to a required signal level for
20 generation of a noise-reduced normalized speech signal.

21 11. Method in accordance with claim 10, in which the training
22 is used to create an acoustic model, especially an HMM.

23 12. Electrical device (MS) with a microphone (M) and Central
24 Processor Unit (CPU), which is configured for executing a
25 method in accordance with claim 1 to 11, especially for
26 executing the steps a, b and c).

27 13. Device in accordance with claim 12, with a device for

1 creating feature vectors for description of a speech signal.

2 14. Electrical device in accordance with claim 12 or 13, which
3 is equipped as a communication device, especially a mobile
4 station, with send/receive apparatus (FS) and a device in
5 accordance with claim 12 or 13

6 15. Communication system with mobile station in accordance with
7 claim 14 and a communication network, in which speech
8 recognition is executed.